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- (c) and a plurality of atomization fluid passageways, comprising steam, configured to fluidly communicate with the central passageway via atomization fluid passageway outlets, wherein the atomization fluid passageway outlets have a forward acute angle greater than 60° and are positioned concentrically about a perimeter of the central passageway; and
 - (d) a heating zone configured to promote heat exchange between the central passageway and the plurality of atomization fluid passageways to superheat said steam, wherein the heating zone is positioned upstream from the atomization zone; and
 - (e) a mixing zone comprising a first inlet for a fluid to be atomized and a second inlet positioned upstream of said central passageway from said atomizing fluid passageway outlets, which second inlet is a sparger which is comprised of a cylindrical conduit containing a plurality of sparger fluid passageways to allow the passage of sparger fluid into said mixing zone, and which mixing zone is in fluid communication with said central passageway.
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Please replace claim 20 with the following amended claim 20:

20. An apparatus for atomizing a fluid comprising:

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- (a) a central passageway for allowing a fluid to be atomized to pass therethrough;
 - (b) an atomization zone positioned downstream from and in fluid communication with, said central passageway;
 - (c) a plurality of atomization fluid passageways, comprising steam, configured to fluidly communicate with the central passageway via atomization fluid passageway outlets, wherein the atomization fluid passageway outlets have a forward acute angle greater than 60° and are positioned concentrically about a perimeter of the central passageway; and

(d) a heating zone configured to promote heat exchange between the central passageway and the plurality of atomization fluid passageways to superheat said steam, wherein the heating zone is positioned upstream from the atomization zone; and

(e) a steam splitter positioned within the central passageway upstream from the atomization fluid passageway outlets, and

B2 (f) a mixing zone comprising a first inlet for a fluid to be atomized and a second inlet positioned upstream of said central passageway from said atomizing fluid passageway outlets, which second inlet is a sparger which is comprised of a cylindrical conduit containing a plurality of sparger fluid passageways to allow the passage of sparger fluid into said mixing zone, and which mixing zone is fluid communication with said central passageway; and

wherein the central passageway has a cross-section comprising two-dimensions, wherein as at least one of the two dimensions converges in a downstream direction along at least a portion of the length of the central passageway, wherein the atomization zone has a cross-section comprising two dimensions and wherein at least one of the dimensions diverges in a downstream direction along at least a portion of the length of the atomization zone.

Please replace claim 41 with the following amended claim 41:

41. A nozzle for atomizing a petroleum product comprising:

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- (a) a central passageway for allowing a fluid to be atomized to pass therethrough;
 - (b) an outlet comprising an atomization zone and a spray distributor positioned downstream from and in fluid communication with, said central passageway, which spray distributor is configured to promote a predetermined spray pattern;

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- (c) a plurality of atomization fluid passageways fluidly communicating with the central passageway via atomization fluid passageway outlets, wherein the atomization fluid passageway outlets have a forward acute angle greater than 60° and are positioned concentrically about a perimeter of the central passageway; and
 - (d) a heating zone configured to promote heat exchange from the petroleum feed and the atomization fluid before the petroleum feed and the atomization fluid mix.
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Please replace claim 52 with the following amended claim 52:

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52. The apparatus according to claim 18 wherein said sparger comprises at least one fluid passageway configured to allow fluid passage into said central passageway, wherein said sparger fluid passageways are configured to promote radial flow, axial flow, or combinations thereof, said flow relative to the overall direction of fluid flow in said central passageway.
